

NEW NEOTROPICAL ANTOCHINI (*TIPULIDÆ* *DIPTERA*).

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This paper considers only the members of the Limnobiine tribe *Antochini*, a rather extensive group in the tropics. The genera have an almost Cosmopolitan distribution, occurring in both the Old and New Worlds, exceptions existing in *Styringomyia*, *Paratropeza*, *Thaumastoptera*, *Diotrepha* and *Atarba*. The material studied herein, is, for the most part, the property of Cornell University and the U. S. National Museum and to Dr. J. Chester Bradley and Mr. Frederick Knab, I am indebted for the privilege of examining these collections.

A KEY TO THE ANTOCHINE GENERA.¹

1. Cell R_2 present (Central and South Amer.) *Paratropeza* Schiner.
Cell R_2 absent. 2
2. Rostrum prolonged, at least as long as the head. 3
Rostrum shorter than the head. 6
3. Rostrum about as long as the head. (Eur.; N. and C. Am.; Austral.)
Rhamphidia Meigen.
Rostrum about as long as the body. 4
(*Toxorrhina* group)
4. Radial sector two-branched 5
Radial sector unforked (N. and S. Am.; Africa). *Toxorrhina* Loew.
5. Anterior branch of R_s (R_{2+3}) long, as long as the posterior branch
(R_{4+5}) (Eur.; N. and C. Am.; East Ind.) *Elephantomyia* Osten Sacken
Anterior branch of R_s (R_{2+3}) very short, oblique, tending to disappear.
(Africa, America; tropics) *Ceratocheilus* Wesche
6. Cu_2 at least 4 times as long as the deflection of Cu_1 ; deflection of
 Cu_1 tending to retreat toward the wing basis. .7 (*Thaumastoptera* group)
 Cu_2 not much more than twice as long as the basal deflection of
 Cu_1 ; Cu_1 (deflection) remaining at, or near, the fork of M 9
7. M_{1+2} free at the wing-tip. (M_2 fused with Cu_1 obliterating cell M_2 .)
(Europe; Seychelles Is) *Thaumastoptera* Mik
 M_{1+2} fused to the wing-tip 8
8. M_3 distinct from Cu at its tip forming a cell M_3 ; basal deflection of
 Cu_1 under the base of R_s . (Eur.; N. and C. Am.; Austral.)
Orimarga Osten Sacken

¹Contribution from the Entomological Laboratory, Cornell University.

- M_3 fused with Cu to the tip, obliterating cell M_4 ; basal deflection of Cu_1 retreated far toward the base of the wing. (N. and S. Amer.) *Diotrepha* Osten Sacken
9. R_1 very short, ending before the middle of the wing, the sector originating near its tip. (Australasia to Africa) *Styringomyia* Loew.
 R_1 ending beyond the middle of the length of the wing, the sector remote from the tip. 10
10. Radial cross-vein present. 11
 Radial cross-vein absent. 12
11. R_s very long, straight, but diverging from R_1 ; basal deflection of R_{4+5} twice as long as cross-vein $r-m$; basal deflection of Cu_1 before the fork of M ; radial cross-vein usually in a direct line with $r-m$; anal angle of the wing very prominent. (Eur.; N. Amer.)
Autocha Osten Sacken
 R_s shorter, more arcuated; basal deflection of R_{4+5} about as long as $r-m$; basal deflection of Cu_1 at, or beyond, the fork of M ; radial cross-vein usually slightly distad of the level of $r-m$; anal angle of the wing feeble. (N. and S. Am.; Asia; Australia)
Teucholabis Osten Sacken
12. R_s short, not much more than twice as long as the deflection of R_{4+5} ; cell R_1 broader at base than at tip (*Atarba*) or else R_s gently arcuated and the veins issuing from cell 1st M_2 twice as long as that cell (*Dicranoptycha*). 13
 R_s long, and very straight, close to R_1 leaving cell R_1 extremely narrow; deflection of R_{4+5} very short, almost perpendicular to R_s at its origin; cross-vein m present in New World species. (Eur.; N. Amer.) *Ellipectera* Schiner.
13. R_s originating opposite to the end of Sc ; cell 1st M_2 short, almost as broad as long. (Eastern U. S.) *Atarba* Osten Sacken
 R_s originating far before the end of Sc ; cell 1st M_2 elongate, twice as long as broad. (Eur.; N. Am.; Africa; East Ind.)
Dicranoptycha Osten Sacken

Ellipecteroides Becker², erected in 1907 for the new species, *piceus*, is almost certainly *Eriopterine*. The presence of a cell R_2 is a tribal character, not generic as considered by Becker. But one genus, *Paratropieza* Schin., occurs in the Antochine series that possesses cell R_2 , but this genus, in all other respects is a true member of that series. *Ellipecteroides* is not, but seems, rather, to be a generalized form allied to *Gonomyia*. It is not at all related to *Ellipectera* Schin., as Becker states, and this reference was probably made chiefly on the lack of cell 1st M_2 (discal), a very unimportant

¹*Ellipecteroides*, Becker is omitted; see discussion at the end of this key.

²Becker, T. Die Ergebnisse meiner Dipterologischen Frühjahr-reise nach Algier und Tunis 1906. (Zeitschr. für Syst. Hymenopt. und Dipterol.; vol. 7, p. 239; figure) (1907).

character in this genus. The insect, *piceus*, from Algiers, N. Africa, is blackish with yellow spots; cross-vein *r* absent; cell 1st M_2 open, the outer deflection of M_3 being obliterated; R_s rather straight, but diverging strongly from R_1 , etc. *Gymnastes* Brunetti; not distinct from *Teucholabis*, the opinion of Mr. F. W. Edwards who is well acquainted with the Old World Fauna.

Teucholabis Osten Sacken

The number of species belonging to this genus now known from the American Continent is 21, of which I have seen 12.

Teucholabis venezuelensis Macq.¹ and *T. melanocephala* Fabr.² have not hitherto been recognized as belonging to this genus but there can be no question as to their position. Both species are described as having pale clouds on the wings, not distinct brown bands as in the *polita* group.

The *Limnobia bifasciata* Fabr.³ is likewise a *Teucholabis* and conspecific with *trifasciata* End.⁴; however the Fabrician name is preoccupied⁵ and so Enderlein's name is valid.

Rhamphidia scapularis Macq.⁶ is a *Teucholabis* as was indicated by Osten Sacken in 1869; still Kertész (1902) retains it under *Rhamphidia*; the same statement applies to *Limnobia simplex* Wied⁷ which is retained in *Limnobia*.

Teucholabis sackeni sp. nov.

Wings banded; thorax with a chestnut dorsal stripe; femora yellow with the tip black.

♀. Length, 4-4.5 mm; wing, 5 mm.

Fore leg, femur, 3.4 mm; tibia, 3.4 mm; tarsus, 3 mm.

Middle leg, " 3 mm; " 2.6 "

Hind leg, " 3.8 mm; " 3.1 " tarsus, 2.5 mm.

Head: rostrum, palpi and antennæ dark brown. Front, vertex and occiput rather dark brown.

Thorax: collare orange-yellow; prothorax very light yellow; mesothorax, bright yellowish-brown; prescutum with a dark brown median mark, broadest anteriorly, narrowed behind, beginning rather far behind the anterior margin of the sclerite,

¹ Macquart, Dipt. Exot.; supplément, 1, p. 19; (1846), (*Limnobia*)

² Fabricius, Entomol. Syst.; vol. 4, p. 241; (1794); (*Tipula*)

³ Fabricius, Syst. Antl.; p. 31; (1805); (*Tipula*)

⁴ Enderlein, Zoöl. Jahrbuch Abth. F. Syst.; vol. 32, pt. 1; p. 69, 70 (1912)

⁵ Schrank, Enum. Ins. Austr.; p. 428 (1781) (*Tipula*)

⁶ Macquart, Dipt. Exot.; vol. 1, pt. 1; p. 73 (1838) (*Rhamphidia*)

⁷ Wiedemann, Aussereur. Zweifl. Insekt.; vol. 1; p. 549 (1828) (*Limnobia*)

running caudad; sides of the sclerite between the pseudosutural foveæ (humeral pits) and the transverse suture, almost filled with a large rounded dark brown spot, this mark not touching the dark median vitta (as in *melanocephala*); scutum, with the exterior front angles darkened; scutellum and post-notum very dark chestnut-brown. Pleuræ, propleuræ yellowish; mesopleuræ very dark brown, almost black. Halteres pale at base, stem brown, knob bright yellow. Legs: coxæ and trochanters bright yellow, abruptly contrasted with the dark pleural and sternal coloring; femora light yellow, the apical portions abruptly dark brownish-black, these dark tips rather broadest on the fore-femora; tibia dull yellow, the extreme tip brown, broadest again on the fore-tibia; tarsi dark brown. Wings: hyaline, stigma dark brown, square; wings broadly banded with pale greyish-brown, the innermost band extending from the origin of Rs to the end of 2nd Anal, almost diamond-shaped, the breadth sub-equal to the length; the middle fascia is a paler continuation of the stigma, across the cord of the wing and ending at 1st Anal, rather narrowest near the fork of M; the apical band is rather darker and fills out the wing tip, its inner margin straight and embracing the outer end of cell 1st M₂. Venation: (See fig. a.): Cell 1st M₂ very elongate, rather square at its inner end; veins beyond cell 1st M₂ (discal) short, so that that portion of M₁₊₂ between cross-veins *r-m* and *m*, is longer than the distal segment of M₁₊₂. The type has the cell 1st M₂ open, confluent with cell M₃, due to the disappearance of the outer deflection of vein M₃.

Abdomen: tergum dark brownish-black, the apices of the segments broadly paler; 7th tergite orange-yellow; 8th blackish; valves of the ovipositor pale, orange-yellow; sternum similar, but the pale apical margin even broader, embracing the apical half of the sclerite.

Holotype, ♀, Sonsonate, Salvador, Cent. Am. (Frederick Knab, Coll.) Paratypes, ♀ ♀. Aguna, Guatemala, Cent. Am. (alt. 2000 ft.) (Dr. G. Eisen, coll.)

Type and one paratype in U. S. Nat. Mus. Coll. (No. 15,124).

One paratype in author's collection. I take pleasure in naming this handsome species after the "Father of American Dipterology," Baron C. R. von Osten Sacken.

This species falls in the *polita* group, the species of which may be separated by the following key:

1. Thoracic præscutum entirely shiny black. 2
 Thoracic præscutum more or less orange-yellow or brownish. 4
2. Pronotum yellowish. (Colombia) *trifasciata* End.¹
 Pronotum black. 3
3. Small species (♂, length, 2.5-3 mm.); legs with the basal two-thirds
 yellowish-tawny. (Brazil) *polita* O. S.²
 Larger species (♀, length, 5 mm.); leg dark brown. (Costa Rica) . . . *rostrata* End.³

¹ Enderlein, Zoölog. Jahrbuch abth. f. Syst.; vol. 32, pt. 1; p. 69, 70; fig. R₁ (1912).

² Osten Sacken, Berl. Ent. Zeitschr.; vol. 32, pt. 2; p. 189 (1887).

³ Enderlein, Zoölog. Jahrbuch abth. f. Syst.; vol. 32, pt. 1; p. 68, 69; fig. Q₁ (1912).

4. Mesonotum mostly orange; a black spot on the præscutum. (Eastern Brazil)..... *pulchella*, sp. n.
 Mesonotum chestnut in the middle, black on the sides of the præscutum. (Guat.—Salvador)..... *sackeni*, sp. n.

***Teucholabis pulchella* sp. nov.**

Wings banded, thorax yellowish with a large black spot on the mesonotum; femora brown.

♂. Length, 8.3 mm.; wing, 7 mm.

Fore leg, femur, 3.4 mm.; tibia, 4.1 mm.; tarsus, 4.6 mm.; (alcoholic) ♂.

Head: rostrum and palpi brown, the apices of the segments of the latter very narrowly paler; antennæ brown. Front, vertex and occiput brown.

Thorax: pronotum light yellow; mesonotum entirely clear light yellow, except the middle of the præscutum which has a prominent rounded, transverse, brown mark extending from the level of the pseudosutural fovea back to near the suture, the caudal margin of the mark produced backward in two small lobes, one on either side of the median line. Pleuræ clear light yellow. Halteres brown, extreme base of stem pale; knob less dark than the stem. Legs: coxæ and trochanters light yellow; femora, basal half light brown, apical half dark brownish-black; tibiæ and tarsi dark brownish-black. Wings: hyaline or nearly so; an indistinct brown band across the wing from the base of Rs to the end of 2nd Anal; a much darker brown band, broadest in front begins over the cross-vein *r* and extends back to Cu; outer end of cell 1st M₂ margined with brown; tip of wing brown, the inner end of this band distant from the outer end of cell 1st M₂. Venation, as figured (Fig. b.)

Abdomen, dark brown, the genitalia swollen. Hypopygium: (See fig. 1.): 9th tergite, caudal margin strongly convex; pleural pieces very stout, at the apex with two short teeth; the inner margin produced caudad and entad in an obtuse tooth; viewed from the ventral aspect, with a stout apical appendage (a) inserted on the side of the pleura, below the apical teeth described above; it is narrowed at the ends, swollen on the inner face in the middle and bears numerous hairs at its tip; just entad of the base of the apical appendage is a rounded lobe (b); between the pleuræ arises what is apparently the guard of the penis, dark brown basally, apparently less chitinized apically (c), shaped as in the figure.

Holotype, ♂, Igarape-assu, Para, Brazil; Jan. 30, 1912. (H. S. Parish, coll.)

Type in Cornell University Museum.

It is probable that the body-colors, described above as brown are, in fresh specimens, jet black and presumably shiny.

The species belongs to the *polita* group and may be separated from its allies by the key under *sackeni*.

***Teucholabis audax* sp. nov.**

Wings unbanded; body-color yellow; large, ♂, wing, 9.5-10 mm.

♂. Length, 11.3 mm.; wing, 9.7 mm.

Fore leg, femur, 8.2 mm.; tibia, 9.6 mm.; tarsus, 8.6 mm.

Middle leg, “ 7.4 mm.; “ 7.4 mm.; “ 5.6 mm.

Hind leg, “ 8.1 mm.; “ 8.2 mm.; “ 6.7 mm.

Head: rostrum yellowish-brown; palpi black; antennæ, first segment bright honey-yellow at the base, abruptly light brown; remainder of the antennæ dark brownish-black. Front very narrow, the eyes almost contiguous at the narrowest portion; front dark brown; the caudal portion of the vertex, and the occiput lighter, more yellowish.

Thorax: cervical sclerites elongated, brown. Prothorax very long, about as long as the mesonotal præscutum and cylindrical, broadest basally, narrowing cephalad to meet the narrow cervical sclerites; pronotum brownish-yellow. Mesothorax, præscutum medially bright orange-yellow; on the sides brown; in the middle of the sclerite, beginning near the anterior margin, broadest in front, narrowed to a point behind, is a dark brown mark; scutum pale yellow, a continuation of the præscutal pale median vitta, lobes brown, darkest laterally; scutellum bright orange; post-notum yellowish with indistinct brown stripes; pleuræ shiny orange-yellow with patches of grey bloom (possibly not normal). Halteres brown. Legs: coxæ and trochanters light yellow; femora pale yellow with the tip broadly brown, and with a brown post-medial annulus, most prominent on the hind legs; tibia dull yellow, indistinctly darker at the extreme tip; tarsi brownish-black; legs densely covered with long black hairs. Wings: hyaline, veins brown; veins C, Sc and R bright yellow; stigma rounded, dark brown, large; an indistinct brown cloud around the deflection of R_{4+5} . Venation, see figure d.

Abdomen: tergum light yellow, apical segments more brownish, hypopygium brown.

Holotype, ♂, Canal Zone, Panama, Central America. (C. H. Bath, coll.)

Type in U. S. National Museum Coll. (No. 15,126).

This vigorous species is the largest member of the genus in the American fauna. It may be readily recognized by its general yellow color (including abdomen) and its large size.

Teucholabis pleuralis sp. nov.

Wings unbanded: thorax light yellow with a dark, narrow pleural stripe; abdomen without metallic reflexions; femora yellow, brown at the tip.

♂ Length, 5 mm.; wing, 5.3 mm.

Middle leg, femora, 3 mm.; tibia, 2.7 mm.

Hind leg, “ 4 mm.; “ , 3.8 mm.

Head: rostrum and palpi dark brownish-black. Antennæ very dark brown. Front, vertex and occiput dark brown.

Thorax: prothorax light yellow; mesothorax: præscutum orange-yellow with a dark brown median mark, broadest anteriorly, beginning near the cephalic margin, becoming obsolete at about one-half the length of the sclerite; scutum and scutellum orange-yellow, the lobes of the scutum brownish on the antero-exterior angles; post-notum brownish-yellow with an indistinct brown median line. Pleuræ and sternum light honey-yellow, the former with a rather broad, dark brown band beginning on the cervical sclerites, running obliquely above the base of the fore coxæ, through the halteres, and becoming confluent with the dark color of the

abdomen. Halteres dark brown. Legs: coxæ and trochanters light yellow; femora light yellow, the apices broadly dark brown; tibia and tarsi brownish-black. Wings, subhyaline, with a distinct dusky tinge; stigma round, brown, its posterior margin not touching R_{2+3} . Venation: Sc rather long, that portion beyond the origin of Rs slightly longer than cell 1st M_2 (discal); cross-vein r close to the tip of R_1 ; space on R_{2+3} before r , as long as the basal deflection of Cu; cell 1st M_2 very elongated, narrowed anteriorly; outer deflection of M_3 longer than cross-vein m (these two components making up the distal end of cell 1st M_2); basal deflection of Cu_1 slightly beyond the fork of M.

Abdomen: dark brown, not at all with metallic reflexions; two basal sternites yellowish.

Holotype, ♂, Aguna, Guatemala, Central America (Dr. G. Eisen, coll.)

Type in U. S. Nat. Mus. coll. (No. 15,125),

T. pleuralis is closest to *chalybeiventris* Loew¹ from the island of Cuba; it differs in its lack of metallic reflexions on the head and abdomen; prothorax yellow, not brownish; mesothorax with a conspicuous pleural stripe; femora not brownish-black except at the extreme tip; wings not pure hyaline, but distinctly suffused with darker. It is even more closely akin to the specimen which Williston² doubtfully referred to *chalybeiventris*, but no mention is made, in this description, of a pleural stripe. It is very probably the same species; Williston's specimen was from Cuernavaca, Morelos, Mexico.

Teucholabis parishi sp. nov.

Wings unbanded; color light yellow throughout; venation not like typical *Teucholabis*.

♂ Length, 5.2 mm.; wing, 4.1 mm.

Middle leg, femora, 2.6 mm.; tibia, 2.5 mm.

Hind leg, " 3.4 mm.; " 3.5 mm.

(Alcoholic) ♂.

Head: rostrum very short, pale; palpi also very short, the segments subequal, only about twice as long as broad, pale yellow. Antennæ, 16-segmented, segments 1 and 2 short, the second only a little more globular than the third, light yellowish; the apical segments apparently paler. Front broad; broader than the diameter of one eye; ommatidia of the eye large, coarse.

Thorax: light yellow, mesonotal præscutum with darker, orange, stripes (possibly brown in dry fresh specimens); the middle stripe is double, begins at the cephalic margin of the sclerite, ends just before the suture; the lateral stripes begin just behind the pseudo-sutural fovea, run caudad, crossing the suture, on the scutum represented by two spots on each lobe, the posterior one triangular; post-

¹ Loew; Wiener Entomol. Monatschr.; vol. 5, no. 2; p. 33, 34. (Feb. 1861) (*Rhamphidia*)

² Williston; Biologia Centrali-Americana; Diptera, vol. 1, supplement; p. 226 (Dec. 1900).

notum rather darker yellowish. Pleuræ, light yellowish, a dark spot under the base of the halteres, above the hind coxa; a clearer-defined, though smaller, spot on the propleuræ in the vicinity of the anterior spiracle; sternum light orange-yellow. Halteres, stem short, knob large; pale yellow. Legs, pale yellow; only the two terminal tarsal segments slightly darker. Fore legs very widely separated from the middle legs as in the *Antochini*. Wings: light yellowish; veins brown, those in the costal region rather brighter-colored, stigma very indistinct. Venation: (See fig. c.): Sc short ending before the fork of Rs; what seems to be a branch of R_{2+3} arises from R_{2+3} ; I regard it as cross-vein *r*, although it is not complete and is very oblique in position (such as in *Paratropeza*). If this is regarded as a vein, R_2 , then the radial cross-vein is absent and the genus would run down into the *Eriopterini*; I know of no genus, at present, that can receive it.

Abdomen: light yellow; on the sides of the 6th segment rather dark brown, and here with a conspicuous widened enlargement (possibly not normal). Hypopygium: (See fig. k, ka), 8th tergite short, narrower than either the 7th or 9th; 9th (a) tergite convex on the caudal margin, with a deep median notch. Pleural pieces (b) rather narrow, cylindrical, with the appendages at the end or on the ventral face; the outer angle of the pleura produced into a blunt knob (c); apical appendages two, the dorsal one (d), fleshy, inserted near the apex of the sclerite; the ventral one (e) arising from the ventral side, far down near the base of the pleura; the base strongly swollen, the tip chitinized bearing on the inner face, a strong tooth, swollen at the base and projecting inward; the tip, slender, bent inward. What seems to be the guard of the penis (f) is elongated, slender, not swollen, but pseudo-segmented near the tip.

Holotype: ♂, Igarape-assu, Para, Brazil. Jan. 30, 1912. (H. S. Parish, coll.)
Type in Cornell University Museum.

The reference of this curious species to *Teucholabis* is provisional, only. It seems to me as though it might be considered one of the primitive forms of the genus. I take pleasure in naming this insect after its discoverer, Mr. H. S. Parish, the well-known collector and traveller.

Orimarga Osten Sacken

The following species is the second American form to be made known. The two species may be separated by the following key.

1. Thoracic pleuræ without silvery band; legs pale yellow; tip of femora, base and tip of tibia black; wings hyaline, extreme base dark yellow. (Southwest. U. S.).....*arizonensis* Coquillett¹
- Thoracic pleuræ with a broad silvery-blue band; legs dark brown, uniform, wings suffused with darker. (Guatemala, Cent. Am.).....*argenteopleura*, sp. n.

¹Coquillett, "New Dipt. from N. Am.;" Proc. U. S. Mus.; vol. 25; no. 1280; p. 83, 84 (1902)

Orimarga argenteopleura sp. nov.

Dark brownish black; pleuræ with a silvery-blue band; legs uniform dark brown.

♂, Length, 8.8 mm.; wing, 6.4 mm.; abdomen, 6.8 mm.

Fore leg, femur, 5 mm.; tibia, 5.3 mm.; tarsus, 5.1 mm.

Hind leg, " 5.4 mm.; " 5.5 mm.; " 4.2 mm.

♀ Length, 6.2 mm.; wing, 4.9 mm.

♂ Head: rostrum and palpi dark brownish-black; antennæ, basal segments dark, silvery-greyish pollinose; flagellar segments dark brownish-black. Front very pale blue, the vertex and occiput brown with a sparse bluish bloom; back of the eye, on the vertex, seven or eight very long dark hairs.

Thorax: mesonotum very dark brown without apparent dorsal stripes; a narrow bright silvery-blue stripe running along the extreme lateral edge of the thorax, beginning on the end of the prothoracic scutellum, continuing to above the wing-basis. Pleuræ dark brownish-black with a much broader silvery band extending from above the fore coxa back to above the hind coxa. Halteres, stem light brown, knob dark brown. Legs: coxæ, trochanters and extreme base of the femora light brown, the remainder of the legs dark brown. Wings: uniformly suffused with dark; veins almost black; extreme apice of the wings, in the ends of the radical cells, still darker brown. Venation: (See fig. f.): Rs angulated at its origin; cross-vein *r* at the tip of R₁; cross-vein *r-m* distad of the level of *r*; basal deflection of Cu₁ at about one-third the length of Rs.

Abdomen very elongated, dark brownish-black.

♀ Almost exactly like the ♂, but much smaller.

Holotype, ♂ Trece Aguas, Cacao, Alta V Paz, Guatemala, April 24.

(Barber and Schwarz, coll.) Allotype, ♀. Type-locality, April 26, (Barber and Schwarz).

Types in the U. S. National Museum coll. (Cat. No.)

Ceratocheilus Wesché

1910. *Ceratocheilus* Wesché; Journ. Linn. Soc. Zoöl.; vol. 30; p. 358.

1912. *Neostyringomyia* Alexander; Canad. Ent.; vol. 44; p. 85.

The genus *Ceratocheilus* was erected by the late Mr. Wesché for a species which he described as new (*winningsampsoni*), but which Mr. F. W. Edwards has since determined as being conspecific with the *Styringomyia cornigera* of Speiser. Neither Mr. Wesché's paper, nor Mr. Edwards's extremely valuable article (Annals and Magazine Nat. Hist.; series 8, vol. 8, p. 279-283; Aug. 1911) were available to me until after my paper was issued, wherein I erected the subgenus *Neostyringomyia*, using exactly the same type, *cornigera* Speis; consequently my name falls as a rank synonym of

Ceratocheilus. All of the species hitherto described are African. *C. cornigerum* Speiser has spotted wings but *C. gilesi* Edwards has hyaline wings like the New World form.

The discovery of this genus in America is very interesting and we may likewise expect *Styringomyia* to turn up in the Neotropical fauna, when further collections are made.

***Ceratocheilus americanum* sp. nov.**

Wings unspotted; thorax with dorsal stripes.

♀. Length, 10.5 mm. (excluding rostrum); wing, 5.3–6.2 mm.; rostrum, 5.6 mm.

Fore leg, femur, 5.5 mm.; tibia, 5.7 mm.; tarsus, 5.2 mm.

Middle leg, “ 5.4 mm.; “ 6 mm.; “ 4.8 mm.

Hind leg, “ 5.8 mm.; “ 6 mm.; “ 4.5 mm.

The measurements of the legs and body appertain to the ♀ with the largest wing (6.2 mm.), the paratype.

Head: rostrum and palpi dark brown; antennæ dark brown; front brown; vertex and occiput brown, with a greyish bloom behind; genæ grey. Eyes brilliant metallic green. The *corniculus* represented by a rounded plate above the base of the antennæ.

Thorax: collare very dark brown; prothorax concealed from above by the overprojecting mesonotum, only the lateral ends of the scutellum, which shows above the humeri as a rather square brown knob on either side. Mesothorax, præscutum very light buff-colored with dark brown longitudinal stripes; the middle one is broad, begins at the cephalic margin of the sclerite and continues back almost to the suture; on its caudal portion it is indistinctly divided by a pale median vitta; lateral stripes begin behind the pseudosutural foveæ, continue back to the scutum where they cover the lobes; extreme lateral edge of the præscutum buff-colored; scutum dark brown except the pale median depression; scutellum pale greyish-buff; post-notum thinly greyish with indistinct brown stripes on the sides. Pleuræ greyish with brown patches on the sides of the sternum; on the mesopleuræ, just before the wing basis and another just behind the fore coxa; sternum buffy-grey. Halteres, stem light-colored, knob dark brown. Legs: coxæ and trochanters yellowish-brown; femora light brown; tibiæ and tarsi darker brown. Wings: subhyaline, unspotted; veins dark brown. Venation: (See fig. c.); Sc ending just beyond the origin of Rs; Rs oblique, about as long as R_{2+3} ; R_1 beyond Rs about as long as the deflection of R_{4+5} . Basal deflection of Cu_1 before the fork of M.

Abdomen: tergum, sclerites dark brown, from the third outward with the basal-fourth light yellowish; valves of the ovipositor long and slender (See fig. j.). Sternites dull yellow, the extreme tip of segments one to four brown; a narrow, indistinct, linear, brown, median stripe.

Holotype: ♀. Culebra, Panama, Central America. Feb. 16, 1902. (W. M. Black, coll.) Paratype, ♀, Igarape-assu, Pará, Brazil. Jan. 30, 1912 (H. S. Parish, coll.)

Type in U. S. Nat. Mus. coll. (No. 15,127). Paratype, (alcoholic), Cornell University Museum.

The paratype does not differ except in such respects as might be caused by its immersion in alcohol.

Toxorrhina Loew

The Neotropical material that I have before me numbers 30 specimens referable to four species. *T. brasiliensis* Westwood is well-defined, but no specimens in the collection agree with Loew's description of *fragilis*. It is probable that it is an insular form, limited to the Antilles; it will be easy to recognize by its light-colored legs with darker femoral and tibial apices. My material is all continental and ranges from Mexico to Eastern Brazil.

Of the Nearctic species, I have taken *muliebris* O. S. by the hundreds, and have seen several specimens of *magna* O. S. from Georgia. The coloration of these two species is very constant and it is for this reason that I do not hesitate to describe three new tropical forms based largely on color-characters. Venation in the genus is rather inconstant, especially as regards the position of the basal deflection of Cu_1 (*pars ascendens* of Bergroth; *great cross-vein* of Osten Sacken).

In the vicinity of Para, Brazil, Mr. H. S. Parish took four species of *Toxorrhina*, including the large *brasiliensis* Westw. It would seem from this, that the tropics is the principal home of the members of this genus.

KEY TO THE NEOTROPICAL TOXORRHINÆ.

- | | |
|--|------------------------------------|
| 1. Tibiæ darker at the tip. | 2 |
| Tibiæ uniform in color throughout. | 3 |
| 2. Femora uniform throughout; tibiæ black at the tip. (Eastern Brazil) | |
| <i>brasiliensis</i> Westw. ¹ | |
| Femora darkened at tip; tibiæ (probably) not black at tip. (Porto Rico). | <i>fragilis</i> Loew. ² |
| 3. Color light yellow; basal segments of antennæ lighter than the flagellum; abdominal sclerites dark at tip, except the sternites which are uniform yellow. (Eastern Brazil). | <i>flavida</i> , sp. n. |
| Color brown; antennæ unicolorous; abdominal sclerites uniform or dark at base and tip. | 4 |

¹ Westwood, Ann. Soc. Entomol. France; vol. 4, p. 683 (as *Limnobiaorhynchus*) (1835)

² Loew, Linnæa Entomol.; vol. 5, p. 401; pl. 2; f. 16, 17, 18, 22. (1851)

4. Small species (Length, ♂ 5 mm.; wing less than 5; rostrum less than 4 mm.); abdominal sclerites uniform throughout, the apices not darkened. (Eastern Brazil)..... *meridionalis*, sp. n.
 Larger species (Length, ♂, 6–6.5 mm.; wing more than 5; rostrum over 5 mm.); abdominal sclerites pale in the middle but dark at the bases and apices of the sclerites; apice of the sternites narrowly darkened. (Mexico—Eastern Brazil.)..... *centralis* sp. n.

Toxorrhina flavida sp. nov.

Light yellow; basal segments of the antennæ paler than the flagellum; ♀ ovipositor with very slender acicular valves; basal approximation of Cu and 1st A slight. ♀. Length, 6, 6.7, 8.2 mm. Wing, 4.8, 5, 5.4 mm. Rostrum, 3.4, 3.7, 3.8 mm. Fore leg, femur, 3.4, 3.8, 4 mm.; tibia, 4, 4.2, 4.5 mm.
 Middle leg, “ 3.6, 4, — mm.; tibia, 4.5, 3.6,— mm.
 Hind leg, “ 3.3, 3.6, 4.2 mm.; tibia, 3.5, 3.8, 4 mm.
 Upper valve of ♀ ovipositor, 1.9, 2.0 mm.

Head: rostrum rather short, medium brown; antennæ, basal segments varying from light yellow to yellowish-brown; flagellar segments dark brownish-black. Front, vertex and occiput yellowish-grey.

Thorax: cervical sclerites rather dark brown; mesonotum, præscutum rich yellowish-brown, with an indistinct narrow paler median line which becomes obsolete before the suture and in some specimens is bordered on either side by a very narrow brown line; lateral margins of the sclerite dull yellowish, especially bright in front of the pseudosuture; scutum, lobes brownish-yellow, median line greyish; scutellum greyish-white suffused with brown, post-notum dull yellow tinged with brown caudally. Pleuræ uniformly dull orange-yellow. Halteres, stem yellow, knob slightly darker, tinged with brown. Legs: coxæ and trochanters yellow, the latter rather tinged with brown; femora dull brownish-yellow, not darkened at the tip; tibiæ uniform yellowish-brown; tarsi brown. Wings, veins light brown, in costal region more yellowish, subhyaline. Venation (See fig. h.) Sc₁ ending about opposite the origin of Rs; deflection of M₁₊₂ much shorter than that segment of M₁₊₂ between cross-veins *r-m* and *m*; cell 1st M₂ elongated; basal deflection of Cu₁ rather near the fork of M. Basal approximation of Cu and 1st A slight, about one-fourth of Cu beyond the areculus.

Abdomen: tergum rich dull yellow, the caudal margin of each sclerite broadly brown; sternum uniform light yellow. Ovipositor of the ♀, upper valve, base slender, tip acicular, very elongate; lower valves likewise very slender.

Holotype, ♀ Igarape-assu, Para, Brazil, Feb. 1, 1912. (H. S. Parish, coll.) Paratype, ♀ Igarape-assu, Para, Brazil, Feb. 3, 1912. (H. S. Parish, coll.) Paratype, ♀ Igarape-assu, Para, Brazil; Feb. 7, 1912. (H. S. Parish, coll.) Paratype, ♀ Igarape-assu, Para, Brazil; Feb. 4, 1912. (H. S. Parish, coll.)

Types in Cornell University, except paratype No. 3, in author's collection.

Toxorrhina meridionalis sp. nov.

Brown; antennæ uniform in color; abdomen uniformly light brown; ♀ ovipositor with the lower valves stout, blade-like; basal, approximation of Cu and 1st A more extensive.

♂. Length, 4.8 mm.; wing, 4.6–4.8 mm.; rostrum, 3.7 mm.

Fore leg, femur, 3–3.25 mm.; tibia, 3.85–4 mm.

Middle leg, “ 3.2–3.4 mm.; tibia, 3.5–3.6 mm.

Hind leg, “ 3.5–4 mm.; “ 3.8 mm.

♀. Length, 6 mm.; wing, 5.1 mm.; rostrum, 4.2 mm.

Fore leg, femur, 3.2 mm.; tibia, 4.1 mm.

Hind leg, “ 3.5 mm.; “ 3.6 mm.

Upper valve of ♀ ovipositor, 1.3 mm.

Head: rostrum brown; antennæ dark brownish-black, including the basal segments. Front, vertex and occiput greyish, with two indistinct brown lines on the sides of the vertex.

Thorax: cervical sclerites dark brown; mesonotum, præscutum, dark brown darkest medially, paler, almost yellow, before the pseudosuture and along the margins of the sclerite; in some, the median stripe is separated from the lateral by paler; near the suture, with the appearance of two narrow, dark brown lines; scutum, lobes dark brown, the depression between them greyish; scutellum and post-notum brown with a sparse grey bloom. Pleuræ dark brown with a sparse greyish bloom, the extreme dorsal portions of the pleuræ are darker, producing an indistinct dorsal pleural stripe. Halteres brown, extreme base of stem rather paler. Legs: coxæ and trochanters, brown; femora, tibiæ and tarsi dark brown, not darker at the tips.

Wings: subhyaline, veins brown: Venation (See fig. g.): Sc_1 ending opposite the origin of Rs ; deflection of M_{1+2} a little shorter than that segment of M_{1+2} between cross-veins $r-m$ and m ; basal deflection of Cu_1 situated far before the fork of M ; basal approximation of Cu and 1st A rather extensive, about two-fifths the length of Cu beyond the arculus.

Abdomen: segments dark brown without distinct darker markings on the incisures. Ovipositor of the ♀, upper valve, base not strong, the tip slender but relatively short; lower valve, very broad, almost as wide as the base of the upper valve.

Holotype, ♂ Igarape-assu, Para, Brazil; Jan. 26, 1912 (H. S. Parish). *Allotype*, ♀, Igarape-assu, Para, Brazil, Feb. 1, 1912 (H. S. Parish). *Paratype 1*; ♂ Igarape-assu, Para, Brazil; Feb. 4, 1912 (H. S. Parish). *Paratype 2*; ♂ Igarape-assu, Para, Brazil; Feb. 4, 1912 (H. S. Parish).

Types in Cornell University, except paratype No. 2, in author's collection.

Toxorhina centralis sp. nov.

Brown; antennæ uniform in color; abdomen with base and tip of each sclerite dark; ♀ ovipositor with long slender valves; basal approximation of Cu and 1st A moderate.

♂ Length, 6.6–7.2 mm.; wing, 6.2 mm.; rostrum, 5.1 mm.

Fore leg, femur, 4.8 mm.; tibia, 5.3 mm.

♀ Length, 7.2–8 mm.; wing, 5.1–6.3 mm.

Middle leg, femur, 4.1 mm.; tibia, 4.6 mm.

Hind leg, femur, 3.8–4.7 mm.; tibia, 4.2–4.5 mm.

Upper valve of ♀ ovipositor, 2.0 mm.

Head: rostrum dark brown; antennæ uniform dark brown. Front, vertex and occiput light grey, suffused with brown.

Thorax: præscutum rich light brown without apparent paler stripes; sides of the sclerite broadly pale buff; scutum similar, brown; scutellum and post-notum with a sparse greyish bloom. Pleuræ light brown. Halteres light brown, stem paler. Legs uniform light brown.

Wings subhyaline, veins light yellowish-brown. Venation: (See fig. i.): Sc ending opposite origin of Rs, basal deflection of M_{1+2} about equal to that segment of M_{1+2} between cross-veins $r-m$ and m ; basal deflection of Cu_1 usually at, or very close to, the fork of M; basal approximation of Cu and 1st A moderate, about one-third of the length of Cu beyond the arculus.

Abdomen, tergum, sclerites light brownish-yellow, the apice and basis of each sclerite broadly brown, each band as broad as the median pale band; sternum light yellow, the apical fifth of each sclerite brown. Ovipositor of the ♀, upper valve, very long and slender, lower valve also slender, but stouter than the upper valve.

Holotype: ♂ Surinam (H. Polah). Allotype, ♀ Surinam, (H. Polah). Paratype 1, sex? Cordoba, Mexico; April 1, '08 (Fred'k Knab). Paratype 2 ♀, Cordoba, Mexico; May 8, '08 (Fred'k Knab). Paratype 3, ♀, Cordoba, Mexico, May 8, '08 (Fred'k Knab). Paratype 4, ♂, Rio Dulce, Guatemala; Mar. 21, '06 (Schwarz and Barber). Paratype 5, ♀, Cacao, Trece Aguas, Alta V. Paz, Guatemala; April 14, '06 (Schwarz and Barber). Paratype 6, ♂, Steamship "Algiers," second day out from Port Limon, Costa Rica; June 20, 1903 (Dr. J. B. L. Layton). Paratype 7, ♀, Bocas del Toro, Panama; Sept. 28, '03. (P. Osterhout). Paratype 8, Paramaribo, Dutch Guiana (Miss K. Mayo). Paratype 9, ♀ Igarape-assu, Para, Brazil (H. S. Parish).

Types in the U. S. Nat. Mus. coll. (No. 15,128).

Paratypes in U. S. N. M., except No. 4 in author's collection, No. 8, in Acad. Nat. Sci. Phil. and No. 9 in Cornell University.

This species exhibits some differences in coloring and other variations from the type-description but I am quite certain that but one species is included. Most of the specimens show clearly the dark basis and apice of the abdominal tergites. Some variation exists in the position of the basal deflection of Cu_1 , in relation to the fork of M. In most specimens it is close to, or at, the fork; in some rather far proximad of the fork; in paratype No. 9 it is distad, underneath cell 1st M_2 . A few examples show an open 1st M_2 , occasionally one wing exhibiting this character while the opposite wing is quite normal.

Explanation of the Plate 2.

- Fig. a. Wing of *Teucholabis sackeni*, sp. n.
 " b. " " *Teucholabis pulchella*, sp. n.
 " c. " " *Teucholabis parishii*, sp. n.

- Fig. d. Wing of *Teucholabis audax*, sp. n.
 " e. " " *Ceratocheilus americanum*, sp. n.
 " f. " " *Orimarga argenteopleura*, sp. n.
 " g. " " *Toxorrhina meridionalis*, sp. n.
 " h. " " *Toxorrhina flavida*, sp. n.
 " i. " " *Toxorrhina centralis*, sp. n.
 " j. Ovipositor of *Ceratocheilus americanum*, sp. n.
 " k. Hypopygium of ? *Teucholabis parishi*, sp. n.
 Dorsal aspect. (a) 9th tergite; (b) pleura; (c) apice of pleura; (d)
 dorsal apical appendage; (e) ventral apical appendage; (f) guard of the
 penis.
 " ka Ventral apical appendage, (enlarged).
 " l. Hypopygium of *Teucholabis pulchella*, sp. n. Dorsal aspect. (a) apical
 appendage; (b) lobe; (c) guard of the penis.

BOOK NOTICES.

Comstock, J. H. *The Spider Book.*

A Manual for the study of the spiders and their near relatives, the scorpions, pseudoscorpions, whip-scorpions, harvestmen, and other members of the class Arachnida found in America north of Mexico, with analytical keys for their classification and popular accounts of their habits. pp. XV, 721, figs. 770. Doubleday, Page & Co., Garden City, N. Y. (1912).

This large octavo volume deals with an extensive and very interesting group of Arthropods which have hitherto been given very scanty attention outside of scientific journals. In fact it is the first attempt to present in a single book anything like a complete account of the American Spiders and their allies from the combined standpoint of anatomy, taxonomy and ethology.

The general arrangement is very similar to that followed in Prof. Comstock's well-known Guide to the Study of Insects, although the volume conforms at least in binding and typography to the earlier members of the "Nature Series" issued by the same publishers. Owing to the smaller extent of most of the groups of Arachnida, their classification has in many cases been carried down to the genera or beyond, in place of the family classification of the insect manual. The mites and ticks have, unfortunately been treated very briefly, although there are complete tables for the specific determination of scorpions, pseudoscorpions, phalangiidæ, etc. The true spiders are treated with very general completeness